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**WO 2004/035588 A1**

(54) Title: PYRADAZINE COMPOUNDS AS GSK-3 INHIBITORS

(57) Abstract: The present invention relates generally to inhibitors of the kinases, such as GSK3, and more particularly to fused pyradazine compounds according to formula (I) and methods of their use.

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 03/32473

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C07D487/04 A61K31/5025 A61P7/12

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C07D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, BEILSTEIN Data, WPI Data

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X P,A	WO 03/051886 A (PEEL MICHAEL ROBERT ; RENO MICHAEL JOHN (US); SMITHKLINE BEECHAM CORP) 26 June 2003 (2003-06-26) claim 1	8-15, 18-22  1-7,16, 17,23-25
P,A	WO 03/080616 A (WARD ROBERT WILLIAM ; GLAXO GROUP LTD (GB); WITHERINGTON JASON (GB)) 2 October 2003 (2003-10-02) claim 1	1-25
P,A	WO 03/068773 A (GLAXO GROUP LTD ; WITHERINGTON JASON (GB)) 21 August 2003 (2003-08-21) claim 1	1-25
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☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

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- \*Z\* document member of the same patent family

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International Application No  
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>WO 02/18346 A (SANNER MARK ALLEN ; PFIZER PROD INC (US); WAGER TRAVIS T (US); COOPER) 7 March 2002 (2002-03-07) claim 1</p> <p>-----</p>	1-25

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 03051886	A	26-06-2003	WO 03051886 A1	26-06-2003
WO 03080616	A	02-10-2003	WO 03080616 A1	02-10-2003
WO 03068773	A	21-08-2003	WO 03068773 A1	21-08-2003
WO 0218346	A	07-03-2002	AU 8000901 A	13-03-2002
			BG 107455 A	30-09-2003
			BR 0113574 A	22-07-2003
			CA 2420363 A1	07-03-2002
			EP 1313710 A1	28-05-2003
			HR 20030140 A1	30-04-2003
			HU 0302669 A2	29-12-2003
			WO 0218346 A1	07-03-2002
			NO 20030958 A	28-02-2003
			US 2002103185 A1	01-08-2002